

Appendix B: Mainstem Kansas River Water Quality

As noted in the summary information, the Kansas River is the eventual receiving stream for over 50,000 square miles of land stretching back Nebraska and Colorado. It is unreasonable to expect a volunteer watershed team to have a major impact on water quality in the river when so many upstream sources remain contributors. However some knowledge of the water quality in this important public recreational resource is useful to have on hand. Below is summary information for the four monitoring stations along the mainstem of the Kansas river within and just downstream of these two HUC 8s. No attempt has been made to link these concentrations to discharge, as has been done where available in the remainder of this document.

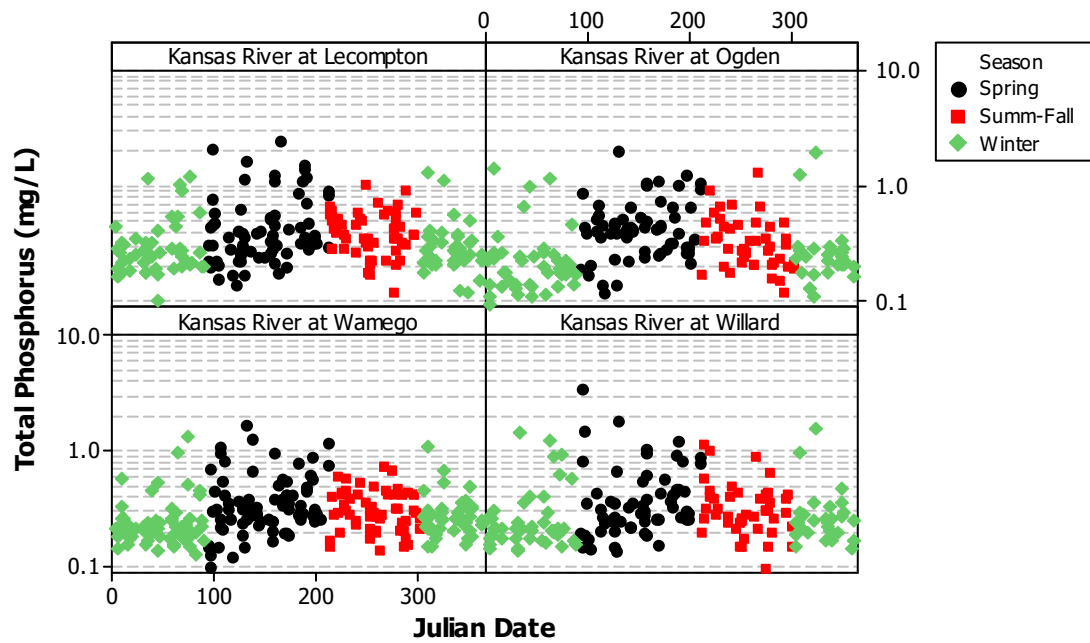
A number of active TMDLs exist on this stretch of river, as well as current 303(d) listings. Interested readers are referred to those documents for more detailed information on the sources and causes of pollution along the river. The data included in these tables are drawn from 1985 onward, a somewhat longer period of record than those available on most of the other monitoring stations. All data available in the KDHE database are included to provide the most complete picture of water quality possible. Over the last 20 years some major improvements have been made to wastewater treatment along the main river, particularly with regard to disinfection of effluent. Those impacts will be less apparent in our monitoring data because monitoring of *E. coli* began in 2003. Other major upgrades to major treatment plants have also had measurable effects on water quality, though improvements can still be made through increased adoption of biological nutrient removal (BNR).

Non-point source reductions can also have some effect on the water quality in the mainstem Kansas River. The majority of the cropland in these two HUC 8s is located in the rich alluvial soils adjacent to the main river. Previous studies have documented the importance of riparian forestry in protecting the river banks, by comparing aerial photographs of the Kansas River before and after the 1993 flood in areas of differing forest density. Areas with greater forest density generally lost less land to the river than those areas with low riparian forest density. Appropriate use of agricultural chemicals and fertilizer may have some impact on the conditions observed in the river, though distinguishing such effects will be complicated because of the magnitude of other sources impacting the river.

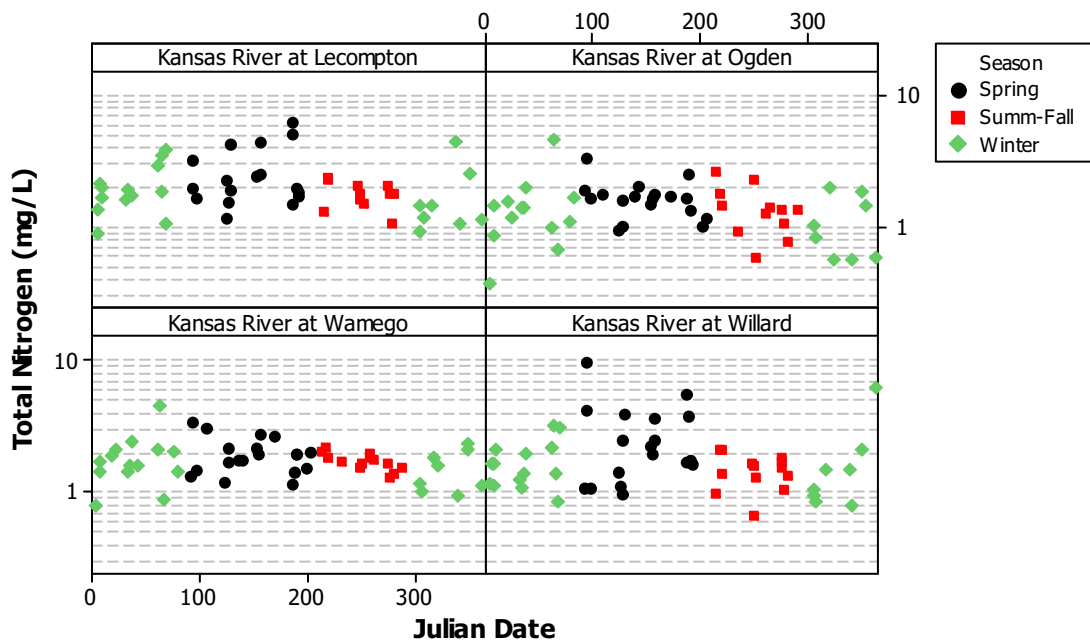
Kansas River at Ogden (SC518)	TP Median	TSS Median	Turbidity Median	TOC Median	Kjeldahl Median	<i>E. coli</i> Median	TN Median
Overall	0.2765 (180)	97 (180)	37 (180)	6.153 (44)	0.99 (51)	20 (31)	1.41 (51)
Spring	0.42 (62)	216.5 (62)	82 (62)	8.4195 (16)	1.307 (18)	108.5 (10)	1.708 (18)
Summer-Fall	0.296 (46)	95 (46)	42 (46)	5.924 (11)	1.0475 (12)	36 (8)	1.3625 (12)
Winter	0.2105 (72)	44.5 (72)	16.95 (72)	5.417 (17)	0.701 (21)	10 (13)	1.188 (21)
Kansas River at Wamego (SC260)	TP Median	TSS Median	Turbidity Median	TOC Median	Kjeldahl Median	<i>E. coli</i> Median	TN Median
Overall	0.279 (258)	74 (254)	31.95 (258)	5.913 (47)	0.992 (54)	36 (32)	1.778 (54)
Spring	0.32 (87)	118 (85)	58 (87)	7.08 (17)	1.16 (19)	52 (11)	1.97 (19)
Summer-Fall	0.31 (63)	80 (63)	38 (63)	5.507 (12)	1.074 (13)	52 (8)	1.766 (13)
Winter	0.2325 (108)	36 (106)	14.5 (108)	5.515 (18)	0.826 (22)	10 (13)	1.6115 (22)
Kansas River at Willard (SC259)	TP Median	TSS Median	Turbidity Median	TOC Median	Kjeldahl Median	<i>E. coli</i> Median	TN Median
Overall	0.27 (179)	88 (179)	35 (179)	5.996 (46)	0.948 (53)	62 (31)	1.676 (53)
Spring	0.33 (63)	122 (63)	53 (63)	7.282 (16)	1.5075 (18)	74.5 (10)	2.1385 (18)
Summer-Fall	0.3 (45)	88 (45)	44 (45)	6.004 (12)	0.973 (13)	110 (8)	1.582 (13)
Winter	0.22 (71)	37 (71)	16 (71)	5.1195 (18)	0.7215 (22)	31 (13)	1.4615 (22)
Kansas River at Lecompton (SC257)	TP Median	TSS Median	Turbidity Median	TOC Median	Kjeldahl Median	<i>E. coli</i> Median	TN Median
Overall	0.31 (221)	98 (217)	40 (221)	6.342 (41)	1.292 (49)	85 (27)	1.859 (49)
Spring	0.355 (74)	147.5 (72)	57.4 (74)	7.2775 (14)	1.672 (17)	70.5 (8)	1.985 (17)
Summer-Fall	0.38 (54)	132 (54)	84.5 (54)	6.7535 (10)	1.292 (11)	120 (7)	1.809 (11)
Winter	0.26 (93)	44 (91)	19 (93)	5.294 (17)	1.006 (21)	25.5 (12)	1.693 (21)

Stream chemistry data from KDHE monitoring stations on the Kansas River by season and overall. Number in parenthesis is sample size.

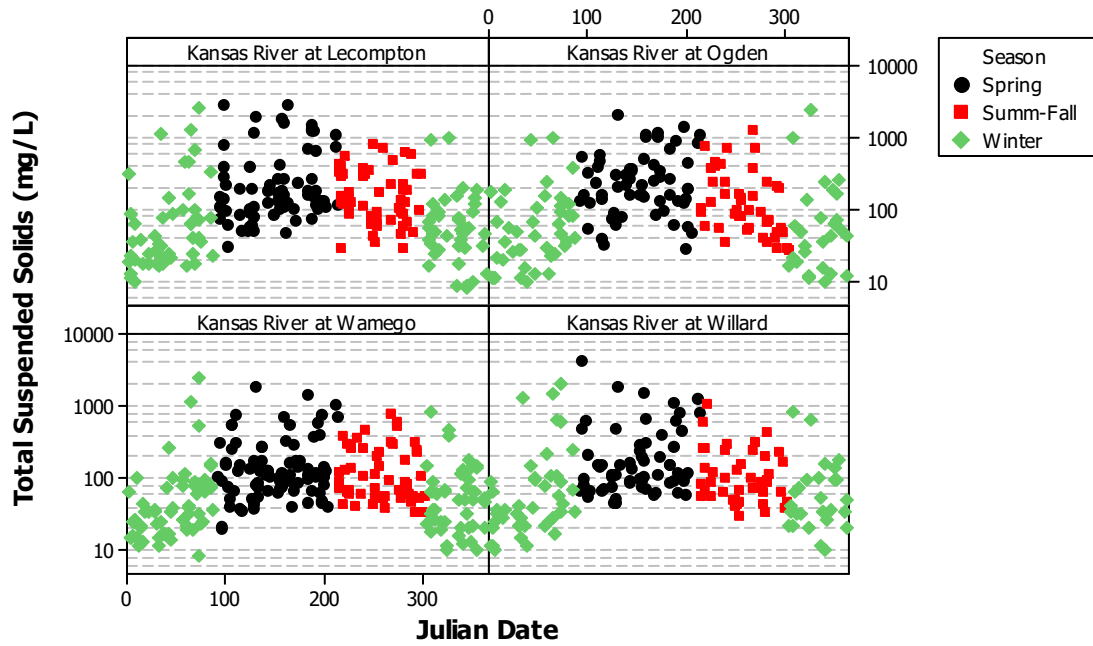
Total Phosphorus Concentrations in the Kansas River



Total Nitrogen Concentrations in the Kansas River



Total Suspended Solids Concentrations in the Kansas River



E. coli Concentrations in the Kansas River

